- to ensure fair and efficient competition between the integrated utility companies and challengers dependent upon access to their monopolized or partially-monopolized facilities, including safeguarding against cross-subsidization of that competition by the incumbent utilities at the expense of their monopoly customers.[2]

While it is possible to justify particular regulations having these intentions in particular circumstances, that fact does not imply that such regulations have net positive welfare effects in general or that rules that were cost-effective at one point in time will remain cost-effective. Just as regulation attempts to correct market failures, there are *regulatory failures* in which well-intentioned government policies lead to reductions in economic welfare.

In telecommunications, one important source of such failure is changes in technology and market structure that undermine the original reason for the regulatory rule. This rationale is cited in Section 11 of the Telecommunications Act, which requires that rules that are "no longer necessary in the public interest as a result of meaningful economic competition between providers of such service" be repealed or modified.

There is widespread agreement among economists that regulation of entry and prices has entailed substantial costs. What is surprising is the magnitude of these estimated losses. Overall annual benefits from economic deregulation —generally from moving prices towards costs—have been estimated to be between $32 and $43 billion per year.

Studies of the effects of regulatory reform in specific industries paint a consistent picture of the relationship among economic regulation, prices, productivity growth and the rate of innovation. Widespread deregulation utterly transformed the U.S. transportation sector. In the airline industry, for example, deregulation resulted in benefits to consumers of $18 billion from lower prices and higher output. In telecommunications, the limited access charge reform—lowering per-minute carrier access charges and increasing fixed-rate subscriber line charges—fueled a 70 percent reduction in interstate long distance prices and an unprecedented growth in long distance usage.

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[2] Alfred E. Kahn, *Letting Go: Deregulating the Process of Deregulation, or Temptation of the Kleptocrats and the Political Economy of Regulatory Disingenuousness*, MSU Public Utility Papers, 1998 at 17.

Application of principles from the economic regulation literature can lead to further significant benefits in telecommunications through the Biennial Review. The Review should be governed by two objectives: enhancing economic welfare and improving regulatory accountability. The following principles would help achieve these objectives:

- **Principle 1:** The regulatory review should advance the public interest by placing greater emphasis on protecting the economic well-being of consumers and producers.

- **Principle 2:** To ensure that the regulatory review serves the interests of all parties, each regulation under review should be required to pass a broadly defined benefit-cost test. Information on the benefits and costs of regulation prepared for the review should be presented clearly and succinctly for each regulation that is analyzed.

- **Principle 3:** If the expected quantifiable benefits of a regulation do not exceed the expected quantifiable costs, and the regulation is not modified or repealed, then the regulator should be required to present a clear explanation justifying the non-quantifiable reasons for the decision.

Applying these principles in a regulatory review should make it easier for parties to hold unelected and elected officials accountable for regulations imposed on the public. In addition, making the economic rationale for regulatory decisions more transparent could help improve economic welfare.

There are, unfortunately, serious difficulties in applying these principles because there are always strong vested interests wishing to maintain the regulatory status quo. Open proceedings and peer review may help to mitigate these problems in the context of the Review. A better long-term regulatory strategy, however, may be to shift the burden of justifying a regulatory rule or procedure from the regulated entity to the regulator. Such a shift is particularly useful in the current Biennial Review where the costs of regulations that distort technology choice or delay entry of new technologies or firms increase radically once markets have been opened to competition.

These principles can be constructively applied to FCC rules. While the intention of these rules may be to control monopoly power, anticompetitive behavior, inefficient pricing, service quality and market failures, a simple economic analysis may reveal that the costs of such activities far outweigh the benefits. Examples of regulatory distortions brought about by the opening of markets to competition under the Telecommunications Act include:

- **Rules that distort the relationship between prices and costs**. The clearest example is the pricing of carrier access services (in Part 69 of the Commission's Rules) based originally on fully distributed costs. Such prices are increasingly inappropriate and unsustainable as competition intensifies. A second example is the Part 65 Rules, which specify how allowed rates of return and depreciation lives are to be calculated. Differences between the economic

cost of capital and the allowed rate of return—and between regulatory and economic depreciation—result in regulated prices that deviate substantially from economic costs.

- **Rules that raise costs of supplying services.** Rules that impose different costs on entrants and incumbents or on different technological choices can distort investment in the market and impose significant welfare losses on consumers. For example, the cost of regulatory delay is estimated to be substantial. When cellular service began, the cost of delay was estimated to amount to about $86 billion or 2 percent of GNP in 1983. The cost of regulatory delay in RBOC supply of voice messaging services was estimated to reduce consumer welfare by about $100 billion in the aggregate. A second example is the unnecessary compliance costs imposed on regulated firms, which ultimately raises costs and prices to consumers. For example, Part 32 accounting rules differ significantly from the accounts that must be kept for SEC reporting, requiring maintenance of two sets of records. As such costs are imposed only on regulated, dominant firms, the cost difference distorts the entry decisions of competitors and the outcome of the competitive process.

Application of our economic principles—or a similar set of principles discussed in USTA's filing—to the current panoply of interstate telecommunications regulation would help identify major areas of rules that meet the Act's criterion of being "no longer necessary in the public interest" as a result of the opening of markets to competition. In addition, the economics literature suggests that the welfare gains from reductions in the regulatory burden could be significant. A thorough housecleaning of the rules is called for in Section 11 of the Act, and it makes a great deal of sense from an economic point of view.

ECONOMIC STANDARDS FOR THE BIENNIAL REVIEW OF INTERSTATE TELECOMMUNICATIONS REGULATION

BY

ROBERT W. HAHN AND WILLIAM E. TAYLOR[1]

I. INTRODUCTION

The Telecommunications Act of 1996 sought to establish a "procompetitive, deregulatory national policy framework" for the U.S. telecommunications industry. To further that procompetitive agenda, the industry and its regulators have spent the better part of two years actively implementing procompetitive policies to open the local exchange networks to competition through interconnection, unbundled network elements and resold services, and they appear poised to open the interLATA long distance market to competition from the former Bell Operating Companies. Once—and if—those monumental tasks are accomplished, their work will be half done.

The second half of the program is laid out in Section 11 of the Telecommunications Act in deceptively simple language. It requires that

> [i]n every even-numbered year (beginning with 1998) the Commission (1) shall review all regulations issued under this Act in effect at the time of the review that apply to the operations or activities of any provider of telecommunications service; and (2) shall determine whether any such regulation is no longer necessary in the public interest as the result of meaningful economic competition between providers of such service. The

[1] Mr. Hahn is Director of the AEI-Brookings Joint Center for Regulatory Studies, a Resident Scholar at AEI, and a Research Associate at the Kennedy School of Government, Harvard University. Mr. Taylor is Senior Vice President of National Economic Research Associates, Inc., head of its Telecommunications Practice and of its Cambridge, Massachusetts office

> Commission shall repeal or modify any regulation it determines to be no longer necessary in the public interest. (47 U.S.C. 161)

From the record of the Senate debate[2] it is clear that this section establishes a continuing biennial review process for all existing FCC rules and regulations. While the standards for review are not articulated, the legislation obviously contemplates that the opening of local and long distance markets to increased competition may call into question whether the public interest is served by the continued existence of particular Commission rules and regulations.

We have been asked by the United States Telephone Association to provide an economic rationale for the elimination or streamlining of regulatory rules and procedures, as well as some guidance regarding the costs and benefits of regulation as experienced in the U.S. telecommunications industry, other U.S. industries and foreign economies. In addition, we point out generic ways in which regulation can help or harm customers and increase or decrease economic efficiency. Finally, we provide some economic thoughts on the process of regulatory reform, noting the effects of the different incentives of agency and industry participants on the measures of costs and benefits from deregulation.

II. AN OVERVIEW OF REGULATION

A. Definition

There are many types of regulation. One common classification scheme emphasizes three parts: economic, social and process regulation. Economic regulation refers to restrictions on price, quantity, and entry and exit conditions for specific industries. Social regulation refers to regulations that affect a wide array of industries. Typically, environmental, public health and safety regulation are placed in this category. Finally, process regulation refers to government management of the operation of the public and private sector, such as paperwork requirements and administrative costs incurred by both producers and consumers.[3] In this analysis, we focus primarily on

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[2] 141 Cong. Rec. S7881, June 7, 1995.

[3] There is frequently overlap between process requirements and economic and social regulation.

economic regulation with some attention to process regulation as it applies in the telecommunications industry.

B. Benefit-cost analysis provides the economic framework for appraising regulation

Benefit-cost analysis is the basic tool that economists use to determine whether a new regulation should be implemented or an existing regulation retained. While it seems almost tautological that the benefits from regulation should be compared with the costs, current research suggest that more than half of the federal government's significant regulations would fail a strict benefit-cost test using the government's own numbers.[4] In response to these findings—and calculations showing that federal regulation costs on the order of several hundred billion dollars per year—Senator Ted Stevens added an unprecedented amendment to the Omnibus Consolidated Appropriations Act of 1997, which requires the director of the Office of Management and Budget (OMB) to provide Congress with estimates of the total annual benefits and costs of all federal regulatory programs and estimates of the benefits and costs of individual regulations. A similar concern engendered Section 11 of the Telecommunications Act of 1996.

C. In deciding whether or how to regulate, policymakers should compare the potential for market failure with the potential for "regulatory failure"

There are several economic arguments supporting regulation.[5] The most common ones are based on correcting for market failure or on equity considerations. In the case of economic regulation, the primary economic rationale has to do with the potential for improving production efficiency. If there are economies of scale or scope, a single firm may, in theory, be able to produce more efficiently than several competing firms, but then its market power may need to be restrained through regulation. In addition, there may be additional value to consumers as more consumers use a network, such as telephones.[6]

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[4]Hahn (1998a).

[5]See MacAvoy (1992).

[6]For example, email will be more useful to a user if more people have email addresses. On the subject of the economics of networks, see Klein (1996), Katz and Shapiro (1991), Liebowitz and Margolis (1994), and White (1998).

While it is possible to provide some economic rationales for regulation for a wide range of economic activity, such rationales are often not persuasive in practice. Just as there is potential for many kinds of "market failure," there is also potential for "regulatory failure"—that is, government policies that lead to reductions in average economic welfare.

Inefficient regulation arises from three intrinsic and largely immutable problems. The economic problem is that it is difficult for a central authority to regulate a company because it lacks the necessary information and the ability to use that information as firms would in unregulated competitive markets. For example, a telephone company might have a good sense of its cost and demand structure, but a regulator typically does not have access to such information. Moreover, firms in unregulated markets learn about costs and demand not by filing studies with headquarters, but rather by offering products and prices and learning from the outcomes. Such information asymmetries frequently make it difficult, if not impossible, for a regulator to regulate efficiently.[7]

Political problems with regulation also lead to inefficient economic results. Since regulation redistributes resources and rents, politicians often use it to secure political gains or further social agendas rather than to correct market failures. A large array of regulatory instruments, such as quotas, licenses, and subsidies, are used to transfer significant amounts of wealth from consumers to small groups of producers. The result is often that regulation is inefficient.

Even if regulations are efficient when enacted, changes in circumstance—e.g., changes in technology, market structure or demand—can reduce the benefits from particular regulations or increase the cost. For example, the economic costs of setting prices based on rate-of-return principles increase sharply when markets are opened to competition because deviations of prices from the market level distort the entry and exit decisions of market participants, reducing dynamic economic efficiency. Similarly, the benefits from detailed regulation of a telephone company's depreciation accounting decrease sharply when prices are no longer controlled in any way by accounting earnings.

This regulatory inertia is the primary source of regulatory inefficiency that Section 11 of the Telecommunications Act directly addresses when it focuses attention on regulations "no longer necessary in the public interest as the result of meaningful economic competition between providers of such service."

III. THE GAINS FROM DEREGULATION AND REGULATORY REFORM

Economic studies of the effects of regulation generally measure changes in consumer and producer welfare—gains and losses in aggregate economic efficiency—stemming from implementation of the regulations in question. Efficiency is the yardstick of choice for economists because in theory it is possible to divide the gains from a more efficient policy in ways that make each agent at least as well off as under the existing policy, so that there is no need to make interpersonal welfare comparisons.[8] Other measures that economists sometimes use to examine the impact of regulation include changes in employment, market structure, output, prices, technical change and productivity growth, and we emphasize at the outset that there is no "correct" measure. Nonetheless, retention of a regulation that imposes significant welfare losses on society should require that some very important societal benefit be clearly articulated, if not quantified.

A. The overall gains from economic deregulation have been substantial

Not surprisingly, removal of regulatory constraints has led to large benefits. To date, the overall welfare gains from deregulation—focussed on eliminating entry and exit restrictions and freeing prices to move toward market levels—across sectors in the United States have been substantial. Table 1, taken from Winston (1993), shows estimates for the benefits of deregulation as well the potential gains from further reform.[9] Aggregate welfare gains amounted to $35 to $46 billion (1990 dollars) per year. Consumers received

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[7] By "efficient regulation" we mean regulation that produces outcomes (prices, quantities and quality levels, productivity growth) commensurate with what would emerge from the market under competitive conditions.

[8] If every party is at least as well off as before the policy change, then we avoid having to compare states in which one party is somewhat worse off but everyone else is exceedingly better off.

[9] See Winston (1993).

annual gains of $32 to $43 billion per year from lower prices and better services, while producers gained about $3 billion per year from increased efficiency and lower costs. Winston estimates that additional gains from remaining distortions could be in excess of $20 billion per year. Table 2 shows that the annual efficiency costs of economic regulation are in the billions of dollars, but appear to be much smaller than the costs associated with transfers (e.g., between producers and consumers). The Winston study shows that it is possible to explore systematically the costs and benefits of regulatory activity using standard economic analysis and that though the data is uncertain, such information can be useful in understanding the economic impacts of regulation.

Moreover, there is evidence that the gains from deregulation that economists have estimated are likely to be significantly understated. In a recent paper, Winston observes that the time required for industry to adjust to the new deregulated environment is substantial.[10] Winston notes that although the industry may adjust prices to reflect marginal costs quickly after deregulation, it takes time to optimize production. He argues that policymakers and the public tend to notice only the short-term effects and, therefore, undervalue the benefits of deregulation. Frequently, the positive impact that deregulation has on innovation is overlooked. Innovations in technologies and operations sparked by deregulation increased productivity and reduced operating costs substantially.

B. Measures of aggregate impacts of regulation suggest it can have a significant impact on the economy[11]

Most studies of the overall economic impact of regulation have focused on federal regulation in the United States.[12] The first study to synthesize data on the costs and benefits of regulation was done by Hahn and Hird (1991).[13] In analyzing the cost of economic regulation, the authors distinguish between transfers and efficiency costs.

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[10] Winston, Clifford (1998), "U.S. Industry Adjustment to Economic Deregulation," *Journal of Economic Perspectives, 12(3)*, 89-110.

[11] This section and the next section build on Guasch and Hahn (1997).

[12] See Weidenbaum and DeFina (1978); Litan and Nordhaus (1983); Hahn and Hird (1991); Hopkins (1992); Winston (1993); Office of Management and Budget (1997); Weidenbaum and DeFina (1978).

[13] See Hahn and Hird (1991).

Transfers represent payments from one group to another (e.g., producers to consumers); efficiency costs represent net losses in producer and consumer surplus.[14] Both measures are important, but for different reasons. Transfer payments provide a measure of the winners and losers from regulatory change, while changes in net surplus provide an indication of the overall impact on the economy or particular industry under investigation.

Focusing on the cost side of regulation, Hopkins has extended the work of Hahn and Hird. Hopkins' principal insight is that the cost of process regulation is substantial. Table 3 provides estimates of the cost of social, economic, and process regulation as of 1991 and for selected years from 1977-2000. The total cost of regulation in 1991 is estimated at $542 billion (1991 dollars). The largest component of the regulatory cost was process regulation, or $189 billion in annual expenditures related to government paperwork requirements, primarily for tax compliance. The tax compliance costs do not necessarily represent efficiency costs, however, because one must consider all aspects of a tax system in evaluating its impact on efficiency. Nonetheless, the shear magnitude of the process costs suggest that paperwork could be reduced dramatically while improving efficiency.[15]

Outside of the United States, much less work has been done to measure the aggregate benefits and costs of regulation. A tabulation of available results is shown in Table 4. In Australia, the total cost of regulation was estimated to be between 9 and 19 percent of GDP in 1986.[16] Mihlar (1996) provides a preliminary estimate for the costs of regulation in Canada of 12 percent of GDP.[17] Based on an assumed ratio between private

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[14] Consumer surplus is the difference between the price customers pay and the price they would be willing to pay. Producer surplus is the difference between the price customers pay and the cost of supplying the product or service.

[15] Hopkins' estimate for the total cost of regulation includes transfer costs and process costs. Subtracting transfer costs yields an estimate of $413 billion, or over $1,500 per person for 1991. If process costs are not included, this figure is reduced by about half. See Hopkins (1992). OMB provides a critique of Hopkins (1992). See Office of Management and Budget (1997). For an overview of the strengths and limitations of estimating the costs and benefits of federal regulation see Hahn (1998a).

[16] Organization for Economic Cooperation and Development (1996), "Regulatory Reform: A Country Study of Australia," PUMA/REG(96)1, Paris.

[17] See Mihlar, Fazil (1996), "Regulatory Overkill: The Costs of Regulation in Canada," Fraser Institute, Vancouver, British Columbia, Canada.

compliance costs and regulatory program spending, Mihlar extrapolated national regulatory costs from federal and provincial administrative budgets. While the calculation is crude, it provides a rough estimate of the size of the regulatory burden. By comparison, the cost of regulation in the U.S. is estimated at between 7.2 and 9.5 percent of GDP.

Three points are worth noting about the regulatory cost estimates in Table 4, since they are often cited without careful analysis. First, the figures are highly uncertain and often incomplete. Yet, estimates as reported in the press and even scholarly papers sometimes fail to reflect this uncertainty. Second, the figures developed using this approach to cost estimation are likely to understate the total impact of regulatory costs because they do not include the adverse impact that regulation typically has on innovation. Third, the cost of regulation as a fraction of GDP is fairly significant for countries where such estimates are readily available, ranging from 7 to 19 percent. In addition, there are significant benefits to deregulation.[18]

Many studies have attempted to estimate the adverse impacts of regulation using measures other than economic cost. For example, Christensen and Haveman (1981) examined the effect of regulation on labor productivity and concluded that over 10 percent of the slowdown of the growth in labor productivity in the mid-1970s was due to the expansion in federal regulation.[19] MacAvoy (1992) examined the long-term growth effects of regulation on eight industries from 1973 to 1987. He found economy-wide losses of 1.5-2.0 percent of U.S. gross national product (GNP).[20] Studies examining environmental, health and safety regulation have yielded qualitatively similar impacts. For example, Jorgenson and Wilcoxen (1990) found the cost of pollution control was associated with a reduction of over 2.5 percent of U.S. GNP over the period between

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[18] The Organization for Economic Cooperation and Development (1997) also estimated that regulatory reform programs could increase GDP in the long run by as much as 3.5 percent in the United Kingdom and by as much as 6 percent in Japan, Germany and France.

[19] Christainsen and Haveman (1981). The authors estimated that between 12 and 21 percent of the slowdown in the growth of labor productivity in U.S. manufacturing during 1973-77, as compared with 1958-65, was due to the expansion of federal regulation.

[20] See MacAvoy (1992).

1974 and 1985.[21] In an examination of the impact of environmental and occupational health and safety regulation on the manufacturing sector, Robinson (1995) concluded that the cumulative effect was to reduce multifactor productivity by more than 10% over a twelve year period.[22] Industry-specific regulatory reforms and process reform can improve economic performance

The potential efficiency gains from reforming regulation of pricing and entry decisions in particular industries have been demonstrated worldwide. This subsection reviews the growing body of evidence on the impacts of regulation and also identifies the potential for so-called "process" reform, which aims to streamline regulation.

Studies examining the effect of regulation yield a consistent picture with respect to its adverse impacts on prices, productivity, innovation and economic welfare. For example, Caves, Christensen, and Swanson (1981) undertook a cross-country study to compare total factor productivity growth for U.S. railroads from 1956 to 1974 with the growth achieved by Canadian railroads over the same period. Both industries had access to the same technology, but Canadian railroads were subject to less regulation than U.S. railroads. The authors show that regulation substantially reduced productivity growth and estimate that, if the United States had experienced the same growth as Canada, the cost of providing rail services in 1974 would have been $13.8 billion (1985 dollars) lower.[23] After railroad deregulation in the United States, Willig and Baumol (1987) estimated that between 1980 and 1985, annual operating expenses dropped 26 percent while traffic volume remained virtually unchanged. Deregulation of the rail sector also led to increases in investment.[24]

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[21] Jorgenson and Wilcoxen (1990). See also Hazill and Kopp (1990).

[22] See Robinson (1995). The incremental impact of regulation grew from a 1.1% annual reduction in multifactor productivity growth in 1974-1975 to a 2.5% annual reduction in 1985-1986.

[23] Caves, Christensen and Swanson (1981). While average total productivity growth for Canadian railroads during the period was 3.3 percent per year, it was only 0.5 percent for U.S. railroads

[24] See Willig and Baumol (1987).

Deregulation of the trucking sector led to major improvements in efficiency.[25] The annual welfare loss due to allocative inefficiency resulting from regulation of rail and motor carriers rates has been estimated to be $1 billion to $4 billion (1977 dollars).[26]

A comparison of the pre-and post-deregulated U.S. airline industry also provides striking evidence of regulation's impact on productivity and production costs. Costs per unit of service were reduced by approximately 25 percent and were accompanied by sharp work force reductions[27] with little effect on output in the first few years following deregulation.[28] In addition, excess capacity decreased and productivity increased. Morrison and Winston (1995) estimate the net annual gains to travelers from airline deregulation at $18.4 billion (1993 dollars).[29]

Driven largely by reductions in carrier access charges, U.S. long-distance telephone rates as of 1996 decreased by more than 70 percent since the divestiture of AT&T in 1984.[30] The examples of cellular telephony and voice messaging in the U.S. illustrate how regulation can also slow the introduction of new products and discourage innovation. While the cellular concept was discussed in the late 1940s and was clearly available in 1973, it was only in 1983 that the FCC began to issue licenses using a non-market mechanism. That delay in licensing cellular telecommunications cost the U.S.

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[25] Average unit costs dropped dramatically after deregulation, from $0.3 dollars per ton-mile in 1977 (pre-deregulation) to $0.1 dollars per ton-mile in 1983 (post-deregulation) (1977 dollars). After deregulation, many of the inefficient firms were forced to leave the industry, leaving behind those firms with low unit costs (McMullen and Stanley, 1988).

[26] Braeutigam and Noll (1984) and Winston, Corsi, Grimm and Evans (1990).

[27] For example, work force reductions at American Airlines and United Airlines were 17 and 24 percent, respectively.

[28] See Caves, Christensen, Tretheway and Windle (1987). Under regulation, the 3.0 percent annual decline in unit costs for U.S. airlines was way below the 4.5 percent decline of non-U.S. airlines from 1970 to 1975. Following deregulation, from 1978 to 1983, costs of U.S. airlines fell by 3.3 percent compared to 2.8 percent for non-U.S. airlines.

[29] Morrison and Winston (1986). The authors estimate that consumers are gaining $12.4 billion annually from lower fares under deregulation and $10.3 billion from greater flight frequency. While increases in travel restrictions, travel time, load factors and the number of connections have reduced consumer welfare, the annual gains to travelers are substantial

[30] Taylor and Taylor (1993) and Wall Street Journal (1991), "Special Report: Telecommunications," *Wall Street Journal*, Section R, October 4.

economy more than $25 billion per year (1983 dollars).[31] These losses were about 2 percent of GDP in 1983 when cellular service began. Similarly, the delay in introducing voice messaging services cost more than $1.3 billion (1994 dollars) per year.[32]

Similar post-deregulation effects have been observed in other sectors, such as stock exchanges and banking, where deregulation has improved productivity and lowered unit costs. For example, when stock brokerage fees were deregulated, rates dropped by 25 percent[33], and the overall consolidation and cost reduction were 30 percent in the sector.[34] While firms may have changed the services offered, a number of studies have shown that even after accounting for changes in service, cost reductions were significant.

The productivity gains secured by U.S. banks following partial deregulation of the banking and savings and loan sectors have also been significant. Jobs decreased more than 20 percent in the sector during the 1984-93 period, and productivity (as measured by revenue per employee) increased by more than 300 percent throughout the same period.[35] At the same time, there was a serious problem with the monitoring of financial institutions during this period, which resulted in some major financial losses.[36] The large losses stemmed in part from regulators not taking appropriate actions.

In addition to deregulation of prices and entry, there are several process reforms that would improve economic efficiency. One important step in many regulatory processes involves obtaining a license. Economic licensing is used in many sectors of the economy, such as telecommunications, energy, transportation, and banking. Examples include the Federal Communications Commission requirements for a cable system operator to register before beginning operations and the Federal Energy Regulatory Commission's requirement to obtain a license for the interstate transmission of electricity or the interstate transmission of natural gas. In a forthcoming paper, Huber and Thorne

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[31] Rohlfs, Jackson and Kelly (1991). In addition, the expenditures to obtain those licenses cost society between $500 million and $1 billion.

[32] Hausman and Tardiff (1996).

[33] For orders in excess of 10,000 shares, rates fell in excess of 50 percent.

[34] Jarrell (1984). Employment went from 260,000 in 1987 to 190,000 in 1990.

[35] Guasch and Spiller (1998).

[36] White (1991).

(1998) suggest that costs associated with economic licensing could be quite high. Available estimates in the U.S. suggest that these costs are at least $20 billion annually.[37]

The basic problem is that an applicant for a new or existing license must often face a burdensome review process, which cannot be justified on economic grounds. Huber and Thorne suggest a set of procedural reforms that would shift the burden of proof so that, for example, an applicant for a license would receive that license if the designated government agency did not act in a specified time frame. These reforms would apply to a variety of licensing activities including new applications, renewals, transfers and lifting restrictions on use.

While information on reforms in other developed countries outside the U.S. is less extensive, there is reason to believe that the gains from deregulation of many industries in those countries could be substantial. For example, lifting price and entry restrictions on air travel in Europe could lead to substantial gains for consumers. For example, Table 5 provides some price information for trips of similar length and demand characteristics. The table suggests that fares for trips are roughly twice as expensive in Europe as in the United States. And despite the higher fares, the profitability of many of the European companies is far below that of the U.S. carriers. Indeed, the European high-cost carriers, such as Iberia and Air France (both state owned), have survived until now only with government aid. Good, Röller, and Sickles (1993) argue that liberalization would lead to competition between international carriers and a convergence of cost structures. They estimate that, in 1986, if the European airline industry were as efficient as the U.S. airline industry they would have achieved cost savings of approximately $4 billion (1986 dollars).[38]

There are also significant opportunities for gains in deregulating electricity markets.[39] For example, strict regulations in Germany require domestic companies to purchase electricity from regional producers, even though lower cost power is often available nearby. The extent of the potential gains for consumers is difficult to estimate.

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[37] Huber and Thorne (1998).

[38] Good, Röller and Sickles (1993).

[39] Electricity Association Services Ltd. (1996).

but in the United Kingdom, energy deregulation resulted in a 70 percent increase in productivity and an 18-21 percent reduction in franchise contract prices.[40] The absence of similar deregulation in other European Union countries has led to firms paying over 50 percent more for their electricity than do their American counterparts. Moreover, the impact of higher energy prices on the overall economy can be quite significant.[41]

C. Deregulation and regulatory reform in developing countries is having a positive economic impact

Economic deregulatory initiatives are not confined to the U.S. or even to the developed countries. As described above, there has been much economic deregulation in developed countries in the late 1970s and early 1980s, particularly in transportation and energy. Since the early 1980s, however, economic regulation has not advanced very rapidly even though there is ample room for further deregulation in areas such as telecommunications, electricity and the financial services.[42] Developing countries have been late entrants in the move toward deregulation but are quickly catching up. Indeed, some countries, such as Chile, have progressed even further than most developed countries. And some countries in the Latin America and Caribbean region, such as Argentina, El Salvador, Peru and Mexico, are undertaking major economic deregulation initiatives.[43]

While studies of regulatory reform in developing countries are less extensive, they suggest that deregulation could lead to significant efficiency gains. For countries that have deregulated the efficiency gains have been quite significant. For example, deregulation of entry into the long distance telephone market in Chile has cut rates by 50 percent, making them close to U.S. rates.[44,45] Allowing for private sector participation in

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[40] See Organization for Economic Cooperation and Development (1997). Franchise contract prices from generators to distributing companies have fallen by 21 percent in real terms and those to direct industrial and commercial consumers by 18 percent in real terms.

[41] See Navarro (1996). For example, a 30 percent increase in electricity prices tends to raise the price of goods such as paper and pulp, metals, chemicals and glass by roughly 2.5 percent.

[42] Noll (1998).

[43] See Spiller and Cardilli (1997).

[44] Guasch and Spiller (1998).

the telecommunications sector has cut the waiting time for installation of new lines from a minimum of two years to a matter of weeks in Latin American countries. Similarly, in the port sector, the opening of the port terminals in Buenos Aires to competition has led to an 80 percent reduction of the fees. Also, the opening of stevedoring operations to multiple parties in the port of Montevideo has increased productivity by 300 percent.[46] All those results were achieved within a year of deregulation.[47]

Additional examples include public utilities in Argentina and Uruguay. Chisari, Estache and Romero (1997)[48] estimate the gains from privatization and regulation in Argentina amount to about 1.3% of GDP or $3.3 billion and that all income classes benefit from both privatization and effective regulation (see Table 6). Estache (1996) estimates that Uruguayan firms and consumers are paying an implicit tax of at least 30 percent for water, phone and electricity.[49]

Of particular relevance to the Biennial Review process at the FCC is the observation that developing countries have substantially reduced the costs of various kinds of process regulation. Mexico is currently reviewing regulations for major federal agencies to eliminate unnecessary regulations, simplify regulations that are unnecessarily burdensome, and make the process more transparent. To date, approximately 50 percent of all regulations have been reviewed in seven of twelve ministries. Of the 1008 regulations reviewed to date, 38% are scheduled to be eliminated and an additional 54% are scheduled to be simplified in 1998. The government of Mexico is now implementing a far-reaching program to carefully examine the country's regulatory structure at the federal, state, and local levels. The aims of the Agreement for the Deregulation of Business Activity include streamlining federal regulation, reducing corruption by codifying regulation, and helping to promote more efficient and effective regulation. The

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[45] Crandall and Waverman (1997) estimate the price reduction in long distance service in Chile led to an increase in consumer surplus of $116 million per year in 1994-1995.

[46] Comparable measures in the port of Guayaquil, Ecuador have decreased costs by 60 percent and increased productivity by 55 percent.

[47] See Guasch (1996).

[48] See Chisari, Estache, and Romero (1997).

[49] Estache (1997).

program, while new, has enjoyed some early successes. Recent legislation simplifies administrative procedures, requires a quicker administrative response time, and reduces paperwork for foreign investors. In addition, a series of legal reforms aims to simplify court proceedings and reduce the costs of commercial lending. As a result of these reforms, Mexico City's Superior Court reports that the number of civil trials filed decreased by 24% from 1995 to 1996. Agency-by-agency rule simplification and elimination is also proceeding swiftly. For example, the approval time for a business requiring health, safety, and environmental controls to begin operation has been reduced from an average of over 200 working days to a maximum of 21 working days. Finally, a complete inventory of federal rules in effect is available on the internet. Making such information more easily accessible should help to reduce corruption and compliance costs.[50]

The available evidence underscores the significant gains that developed and developing countries can secure by further deregulating their economies and reducing the cost of process regulation. Estimates of those gains vary from country to country, but exceed one percent of GDP. The bottom line is that the economic analyses of regulation strongly suggest that there could be significant gains from streamlining some regulatory activities, getting rid of others, and moving toward regulation that is less heavy-handed for those activities where regulation is justified

IV. ECONOMIC PRINCIPLES FOR A REGULATORY REVIEW.

This section identifies some key principles from the economic regulation literature that we believe would be useful in implementing the Biennial Review of regulation. Our discussion builds on a growing consensus within the economics community on the need for considering the economic impacts of regulation in public policy decision making.[51]

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[50] Secretaria De Comercio Y Fomento Industrial (1997).

[51] See Arrow, Cropper, Eads, Hahn, Lave, Noll, Portney, Russell, Schmalensee, Smith and Stavins (1996) or Crandall, DeMuth, Hahn, Litan, Nivola, and Portney (1997).

We believe a regulatory review should have two fundamental objectives: first, to help improve regulation so that the average welfare of consumers is improved; and second, to enhance regulatory accountability by making the regulatory process itself more transparent.[52] The principles identified below are designed to help achieve both of these objectives.

Principle 1: *The regulatory review should advance the public interest by placing greater emphasis on protecting the economic well-being of consumers and producers.* Unfortunately, regulatory agencies rarely deem the economic benefits and costs of a regulation a decisive factor in determining whether or not to implement the rule.[53] We think it is critical for policymakers to highlight the importance of economic impacts when evaluating a regulation.

Principle 2: *To ensure that the regulatory review serves the interests of all parties, each regulation under review should be required to pass a broadly defined benefit-cost test. Information on the benefits and costs of regulation prepared for the review should be presented clearly and succinctly for each regulation that is analyzed.*[54] To the maximum extent feasible, regulators should quantify and express all benefits and costs in monetary terms. We recognize, however, that some benefits can only be expressed in qualitative terms. But a benefit-cost analysis would at least require regulators to be explicit about what they count as benefits. Then voters could see for themselves what implicit values regulators placed on those benefits when allowing regulations to be implemented. Transparency is necessary if benefit-cost analysis is to inform decision making. It is very important in conducting a benefit-cost analysis that agencies spell out major assumptions clearly, highlight uncertainties, and summarize the results. Both the summary and the report itself should be easily accessible to people who are familiar with basic economic concepts. References for key estimates should be provided. The summary should include information on the net present value of costs and benefits

[52] See, e.g,. Hahn and Litan (1997).

[53] In some cases, the officials are statutorily prohibited from doing so. In other cases, it may not be in their interest to pursue regulations that would enhance economic efficiency. See Hahn (1996).

Principle 3: *If the expected quantifiable benefits of a regulation do not exceed the expected quantifiable costs, and the regulation is not modified or repealed, then the regulator should be required to present a clear explanation justifying the reasons for the decision.* There may be factors other than economic benefits and costs that the FCC will want to weigh in decisions, such as distributional concerns. However, it is important to make those concerns explicit.

Applying these principles in a regulatory review should make it easier for parties to hold unelected and elected officials accountable for regulations imposed on the public. In addition, making the economic rationale for regulatory decisions more transparent could help improve economic welfare. Regulations frequently involve decisions whose consequences can cost billions of dollars annually—more than is at stake in many direct government expenditure programs. At the same time, regulations can have an important impact on the well-being of the population. Many of those decisions are now made, to a large extent, by federal regulators with the tacit acquiescence of legislators, the President, or both.

Implementation of these principles in the context of a recurring review of regulation—as contemplated in Section 11 of the Telecommunications Act and in the Stevens Amendment—poses additional economic concerns. Regulatory agencies such as the FCC routinely cause vast sums of money to be transferred from one party to another and are thus subject to intense political pressure which raises significant problems for implementing an effective review of regulations. For any given regulation, there is likely to be a well-organized constituency that helps ensure it stays in place.[55] There are many ways discussed in the literature to address the problem of agency bias in regulatory reform. One is through peer review--using independent reviewers (such as the staff of

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[54] Federal regulatory agencies rarely collect and provide information on the full range of regulatory activities. Such information provision is critical both for making the regulatory process more transparent and improving the regulations themselves. See Bliley (1997) and Hahn, (1998b).

[55] This tendency is no accident. Crop and import restrictions on the U.S. peanut market are estimated to transfer about $225 million (in 1987 dollars) from consumers to producers. The cost to the average consumer is peanuts—about $1.23 per year—while the benefit of the program to the average peanut farmer is about $11,000 per year. We should not be surprised that farmers organize to sustain and expand the program while consumers appear to be indifferent

the OMB) who are less likely to be subject to political pressures. A second is to conduct the review in an open manner, allowing for comments by interested parties.

A third alternative is to shift the focus of regulation from the prospective regulation of a firm's possible behavior to enforcement of rules regarding its actual behavior. As observed by Commissioner Powell, regulation has historically permitted companies to build facilities and provide services only after prior regulatory approval, a process that has often been resource-intensive and time-consuming and is only effective in monopoly markets. Instead, Commissioner Powell urges

> enforcement as a means to protect the public against certain harms without hindering companies from entering new markets that lie outside their traditional regulatory boundaries. Also by doing so, we will cut down on the speculative predictions that characterize many of our deliberations presently. Rather than imagining all the dangers that might result if we let a company do what it has asked and then take equally speculative action to meet those speculative dangers, let's instead police conduct and make decisions based on real facts.[56]

Finally, both the perspective and the burden of proof should shift in the Biennial Review. Irrespective of the *degree* of competition in particular telecommunications markets, it is undeniable that *all* telecommunications markets have been opened to competition. Legal and regulatory barriers to entry into local exchange markets have been removed, and the availability of unbundled network elements, resold local exchange services and interconnection at regulated prices largely eliminates the sunk costs that entrants into the local exchange market would otherwise face. Requirements for opening the interLATA long distance market to entry by the former Bell Operating Companies are slowly being made explicit, and there is a strong possibility of full competition in the long distance markets before the end of the century. Thus, in appraising current and future regulation, the perspective must shift, so that the costs and benefits are weighed under the assumption that the market is open to competition. Some types of regulation impose high costs in markets open to competition—e.g., regulations that impose asymmetric burdens on particular firms (CLECs, ILECs, IXCs, or CAPs) or technologies

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[56] Powell (1998).

(wireline/wireless, packet/circuit switched services, or copper/fiber)—and the cost of those regulations in markets opened to competition must be taken into account.

Similarly, because regulation can be so costly in dynamic markets opened to competition, the regulator should bear the burden of proving that the benefits from certain categories of new or current regulations outweigh the costs. Under the best of circumstances, there is considerable uncertainty in forecasting the effects of regulations. Shifting the burden of proof thus implies that measurement uncertainty favors removal of regulations not their implementation or retention. So much uncertainty in economic regulation stems from having to predict what economic agents will do in particular changed circumstances. For example, will customers substitute away from a service if its price increases? Will firms invest less in network infrastructure if earnings are regulated? If the focus of regulation can be shifted away from prospective regulation of possible behavior towards enforcement of regulation regarding actual behavior, much uncertainty can be removed from the process.

In its pleading, USTA has proposed four elements of a standard under which it believes that regulatory relief should be granted. Paraphrasing, USTA would require the Commission to consider whether

1. the stated purpose of the regulation is still valid and relates to the implementation of the Telecommunications Act (as amended),
2. the conditions in the relevant market have changed since the regulation was implemented,
3. the benefits of the regulation outweigh the costs, and
4. elimination of the regulation serves aspects of the public interest other than the Commission's deregulation and pro-competition policies, such as universal service or the accelerated deployment of advanced telecommunications and information services.

In general, we find these standards roughly consistent with the broad economic principles laid out above. The analytic framework is a benefit-cost calculation applied to each regulation. The first two elements of the list are screens that identify specific conditions that signal when the cost of a regulation is likely to exceed its benefits. The fourth element reminds us that benefits and costs must be weighed in the full context of all the

Commission's public policy objectives. While economic efficiency is a compelling goal, there are other important concerns in the Act, including fostering competition in local and long distance markets and accelerating the deployment of advanced telecommunications and information services to all customers.

Missing from USTA's proposed standards is the question of uncertainty and the burden of proof. As discussed above (at 18), it is our view that the Biennial Review process should assume—i.e., treat as a rebuttable presumption—the fact that all telecommunications markets have been opened to competition. Thus, regulations that would fail a benefit-cost test when the regulated firm faces competitive entry would be candidates for rejection. In addition, it should be presumed—again subject to rebuttal—that imperfectly competitive markets can better allocate scarce resources among producers and consumers than even skilled and well-intentioned regulators. Thus, the burden of proof should shift to those parties who would implement new regulations or retain existing ones.

V. APPLICATION TO THE BIENNIAL REVIEW AT THE FCC

Section 11 of the Telecommunications Act mandates a review of all Commission regulations to determine whether each regulation is no longer necessary in the public interest as the result of meaningful economic competition between providers of such service. Regulations not found to be in the public interest would be repealed or modified. Experience with past deregulatory efforts in the U.S. and elsewhere (outlined above) shows that large welfare gains can be expected from such an exercise, and current estimates of regulatory inefficiency indicate that economic regulatory reform can provide welfare gains on the order of 0.3 percent of GDP for the U.S.[57] So a serious, exhaustive and quantitative appraisal of the Commission's Regulations is not just the law; it is also manifestly in the public interest.

[57] See Table 4.

A. At the outset, a process for the Biennial Review must be implemented.

The Biennial Review process envisioned in Section 11 of the Telecommunications Act is not unprecedented. In early 1996, Thomas J. Bliley, Jr., chairman of the House Committee on Commerce, sent a survey to thirteen federal agencies under its jurisdiction,[58] asking how the agencies accounted for costs in the regulatory process for fiscal year 1995 and earlier years. Independently, Hahn (1998) analyzed thirteen federal agencies by interviewing current and past agency officials and examining agency dockets, annual reports, and individual rules and decisions.[59] The study focused on the procedures that federal agencies employ to catalog information regarding the costs and benefits of future and existing regulatory activities.

Many laws and executive orders govern the accounting of costs and benefits in the federal regulatory process. Generally, formal estimates of costs and benefits are only required for major regulations from executive branch agencies.[60] In addition, some statutes, such as the Clean Air Act (section 812), require analyses of the aggregate costs and benefits of programs. Other laws require agencies to estimate the impacts of rules on small entities as well as the burden hours associated with information-collection requests.[61] For the most part, Hahn found at least superficial compliance with those requirements. All executive branch agencies prepare Regulatory Impact Assessments

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[58] The agencies include the Consumer Product Safety Commission, the Department of Commerce, the Department of Energy, the Environmental Protection Agency, the Federal Communications Commission, the Food and Drug Administration, the Federal Energy Regulatory Commission, the Federal Trade Commission, the Department of Health and Human Services, the Interstate Commerce Commission, the Nuclear Regulatory Commission, the Occupational Safety and Health Administration, the Securities and Exchange Commission, and the Surface Transportation Board.

[59] Hahn, (1998b). The agencies include the Commodity Futures Trading Commission, the Federal Trade Commission, the Consumer Product Safety Commission, the Department of Labor, the Department of Transportation, the Environmental Protection Agency, the Federal Communications Commission, the Federal Energy Regulatory Commission, the Department of Housing and Urban Development, the Department of Health and Human Services, the Nuclear Regulatory Commission, the Securities and Exchange Commission, and the U.S. Department of Agriculture.

[60] Those analyses are required under Executive Order 12886 (and previously under 12991) and the Unfunded Mandates Act of 1995.

[61] The Regulatory Flexibility Act of 1980 requires agencies to assess the impact of rules on small entities. The Paperwork Reduction Act of 1980 requires agencies to provide OIRA with estimates of the information-collection burden imposed on the public.

(RIAs) for major rules. In addition, some of those agencies, such as OSHA, many operating agencies within the DOT, and the EPA, estimate the benefits and costs of a subset of nonmajor rules and activities. Of the independent agencies, only the CPSC and the Nuclear Regulatory Commission generally estimate the benefits and costs of rules and licensing activities.[62]

Only a limited number of agencies systematically evaluate the benefits and costs of existing regulatory activities. None of the independent agencies provides such cumulative estimates.[63] Of all the executive branch agencies, only NHTSA and the EPA provide that information, although only partially. NHTSA along with the FHWA have routinely estimated the cumulative impacts of their programs over time.[64] The EPA has estimated the historical cost of environmental regulation as well as costs and benefits of particular programs.

Although agencies rarely provide estimates of aggregate benefits and costs, many review existing programs under statutory requirements, agency initiatives, legislation, and executive programs. While agencies have previously provided measures of success, such as the reduction in the number of pages in the code of federal regulations, they have generally not completed thorough assessments of the effectiveness of such review efforts. In what is probably the most rigorous review program among all agencies, NHTSA continually reviews the effectiveness of existing regulations and often examines whether it has realized the projected costs and benefits.[65] However, without a comprehensive examination of agency programs, it would be almost impossible to quantify the real savings that have resulted from agency reviews of their existing regulatory structure.[66]

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[62] See Nuclear Regulatory Commission (1995). Although primarily a law enforcement agency, the FTC has requirements in place to examine the projected benefits and any adverse economic effects of rules; see Bliley (1997) at 114. In addition, FERC has completed benefit-cost analyses of recent rules associated with the restructuring of the natural gas and electricity industries.

[63] But both the CPSC and the NRC indicated that they could calculate the total costs of regulations to their agency, other government agencies, and the private sector; see Bliley (1997).

[64] See National Highway Traffic Safety Administration and Federal Highway Administration (1991).

[65] See Katzen (1994).

[66] As the Government Performance and Results Act of 1993 is fully implemented, we may have more complete information to assess the effectiveness of agency review programs. Under the act, agencies are required to prepare strategic plans, comprehensive mission statements, and annual program evaluations.